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NEW OR INTERESTING SPECIES OF CLAUDOPUS AND ENTOLOMA FROM THE PACIFIC COAST

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A survey of the rhodophylloid fungi sensu Largent and Benedict (1971) found on the Pacific Coast of the United States has been underway since late 1960. Type specimens of those species described as new from this area have been studied and a report published (Largent, 1971). A list of species previously reported from California, Washington, and Oregon, as well as descriptions of various taxa of *Nolanea,* were published in 1972 (Largent and Thiers, 1972). Additionally a study of *Alboleptonia* was completed and included several species from the Pacific Coast (Largent and Benedict, 1970).

The following account describes my studies of *Claudopus byssisedus* and is the first report of this species from Washington and California. Also included in this report are the following: the first report of *Entoloma madidum* from Washington; a description of a previously undescribed form, *E. madidum* var. *madidum* f. *farinosum;* the creation of a

new variety, *E. madidum* var. *bloxamii,* having as its basionym, *Agaricus bloxamii;* and a discussion and descriptions of a new species *Entoloma trachyosporum* and two new varieties, *E. trachyosporum* var. *griseoviolaceum* and var. *purpureoviolaceum.*

Chemical formulas and techniques for making macrochemical tests are to be found in Largent and Benedict (1970) with the abbreviation of PDAB being used for *p*-Dimethylaminobenzaldehyde. Measurements were made from 10–14 spores, basidia, or cystidia and did not include the apiculus of the basidiospores or the sterigmata of the basidia. Abbreviations used in the taxonomic descriptions are as follows: L= length, D= diameter, L/D= length divided by the diameter, L–D= length minus diameter. The colors used in the descriptions are from Konerup and Wanscher (1961). For example (6, A, 2–3) indicates the page, row, and column, respectively. Unless cited otherwise, *L* preceding the collection number or list of numbers indicates the collections are mine. All collections are deposited in the cryptogamic herbarium of CSU–Humboldt (HSC).

1. Claudopus byssisedus (Pers. ex Fr.) Gill., Champ. Fr. 427. 1876.

Pileus 7–35 mm broad, dimidiate to reniform, at times sessile, conchate or effuso-reflexed; surface glabrous and greyish orange to brownish orange (5–7, B–C, 2–4) beneath a dense layer of whitish fibrils; margin inrolled to incurved, entire and faintly translucent-striate at first becoming decurved, eroded, and non-translucent with age; smooth to undulating; context up to 2 mm thick, light greyish brown, unchanging on bruising; odor and taste farinaceous. Lamellae adnate to uncinate, subdistant, narrow, 2–3.5 mm wide, 10–15 mm long, pallid to light greyish brown becoming pinkish with spore maturation; margin smooth, concolorous, unchanging when bruised. Stipe 1–2 mm broad at the apex, 2–3 (–5) mm long, eccentric to lateral and decidedly curved, at times absent; basal portion of stipe protruding from a dense whitish mycelial mat that forms the fibrils on the pileus; white rhizomorphs radiate throughout the substrate and are attached to the mycelial mat.

Spores 8.0–10.0 × 6.5–7 μm, average length 8.9 μm, average width 6.8 μm, L–D 0.5–3.0 μm (average 2.1 μm), 5–6 -sided, elongate angular; basidia clavate, 34–44 × 9–12 μm, average length 37.5 μm, average width 10.2 μm, L/D 3.4–4.0 (average 3.6), 2–4 spored; cheilocystidia rare to scattered, versiform, 50–55 × 7.5–10.0 × 5–7 (apex) μm; pleurocystidia absent; pileal cuticle an undifferentiated epicutis, 1–2 cells thick, hyphae parallel to the hyphae of the pileal trama; epicutis overlain with a layer of loosely interwoven hyphae, the terminal cells of which are versiform in shape and measure 28–42 (–100) × 9–12 × 5–6 (apex) μm, average length 38 μm, average width 10.6 μm, L/D 3.1–4.2 (average 3.6); pileal trama homogeneous; subhymenium irregular and obscure; cuticle at the stipe apex a palisade trichodermium, at times covered by a superficial layer of hyphae; caulocystidia versi-

form, 37.5–107.5 × 4–17 × 2.5–6.0 (apex) μm, average length 71.1 μm, average width 8.0 μm, average width (apex) 7.5 μm, L/D 4.4–20.5, average 8.9. Clamp connections abundant, present on the hyphae of the superficial layer, of the pileal cuticle, of the cuticle at the apex of the stipe, of the basal mycelial mat, of the rhizomorphs and at the base of the basidia. Pigmentation vacuolar.

Macrochemical reactions: Guaiac, guaiacol, pyrogallol, alpha-naphthol, PDAB positive; aniline, phenol, sulphuric acid, sulfovanillin, Melzer's, selenium dioxide negative.

Habitat and Distribution: On the underside of various substrata: moss mats, rotting conifer and oak branches and logs, and in the crevices of redwood stumps. California and Washington.

Material Studied: CALIFORNIA. Humboldt Co.: *L5280, 5496, 5497.* WASHINGTON. King Co.: *L1699;* Mason Co.: *L2021;* Pierce Co.: *L1059;* San Juan Co.: *L1482, 2043;* Snohomish Co.: *L1602.*

Claudopus byssisedus is easily recognized by its greyish brown lamallae, greyish brown pileus beneath a dense whitish veil, villose stipe, white rhizomorphs, mealy odor and elongate spores that measure 8–10 × 6–7 μm. My specimens are quite similar to descriptions given for *C. byssisedus* by Fries (1821), particularly the color of the pileus and stipe, and the byssoidal fibrils (rhizomorphs) at the base of the stipe. Fries makes no comments on odor or taste.

Rhodophyllus byssisedus (Fr.) Quél. sensu Kühner and Romagnesi (1953) differs from my specimens by having an incrusting pigmentation albeit minute (p. 182) and no clamp connections on the hyphae. Kühner and Romagnesi mention nothing about a villose stipe or about basal rhizomorphs; however they state Fries considered *C. byssisedus* to have a stipe surrounded at the base with byssoidal white fibrils. Since they accepted Fries' concept of this species, one wonders whether their specimens had all of the Friesian features or just the ones mentioned in their description.

Entoloma byssisedum (Fr.) Donk sensu Hesler (1967) differs from all concepts of *C. byssisedus* heretofore mentioned because of its white lamellae, absence of veil on the pileal surface, absence of a villose stipe, absence of rhizomorphs, absence of clamp connections, and having a mild odor. *Rhodophyllus byssisedus* sensu Lange (1936) differs by having pallid gills; no mention is made of the stipe surface, basal rhizomorphs, odor, or taste. *Rhodophyllus undatus* (Fr.) Quél sensu Kühner and Romagnesi (1953) and *Entoloma depluens* (Fr.) Hesler (1967) differ from my concept of *Claudopus byssisedus*—the former because of its consistently centrally attached stipe, pale whitish fibrils on the pileal margin, glabrous pileal disc, glabrous stipe, incrusting pigmentation and lack of rhizomorphs, the latter because of its broader spores (7–8 μm), mild odor and lack of cheilocystidia and rhizomorphs.

On the Pacific Coast, *Claudopus byssisedus* was previously reported only from Mt. Hood, Oregon (Kauffman, 1925).

2. Entoloma madidum (Fr.) Gill., Champ. Fr. 399. 1876. var. madidum forma madidum.

Basionym: *Agaricus madidus* Fr., Epicrisis 144. 1838. for similar species, see the discussion of *Entoloma madidum* var. *madidum* f. *farinosum*.

3. **Entoloma madidum** (Fr.) Gill., Champ. Fr. 399. 1876. var. **madidum** f. **farinosum** Largent, f. nov.

Ut in typo sed odor et sapor farinacei.

Pileus 35–100 mm broad, 10–17 mm high, convex to broadly convex at first, becoming plane and finally uplifted with age, at times obscurely to broadly umbonate; surface glabrous, lubricous to slippery from a partially gelatinized cuticle, at times viscid, often rugulose; bluish gray to dark blue (19–23, F, 2–3(–4)) becoming orange-white (5–6, A, 2) in areas covered by leaves and debris; margin rugulosely striate, often to the disc, even and decurved; trama 7–17 mm thick, white with a decided bluish tinge on exposure to air; odor and taste farinaceous. Lamellae sinuate to emarginate, moderately broad to broad, sigmoid to ventricose, close becoming subdistant with age, 3.5–11.0 mm broad, 15–35 mm long, white at first becoming pinkish with spore maturation; margin concolorous, smooth at first becoming eroded with age. Stipe equal to tapering from apex to base, often widest in the middle, 11–30 mm wide at the apex, 16–24 mm wide in the middle, 9–19 mm wide at the base, 50–110 mm long; surface interwoven fibrillose, the fibrils often irregularly agglutinated and then the surface rimose, bicolorous, bluish grey to dull blue (21–23, D–F, 2–5) at apical one-third to two-thirds at first yellowish white to orange-white becoming, with age and handling, pale yellow, pale orange, or light orange (4–5(–6), A, 2–3 to 4–5(–6), A, (2–)3–4) at the base, frequently white to bluish white to bluish grey in those apical areas unexposed to light (either covered by leaves and debris or between fibrils and in rimose areas); trama concolorous with pileal trama.

Spores 6.5–8.5 × 6.0–8.0 μm, average length 7.8 μm, average width 7.5 μm, L–D 0.0–1.5 μm (average 0.3 μm), ovate angular, at times almost angular nodulose; basidia 37–50 × 10–12 μm, average length 42.8 μm, average width 11.1 μm, L/D 3.8–4.2 (average 3.9), 4-spored clavate; subhymenium indistinct; cheilocystidia and pleurocystidia absent; pileal cuticle a distinct gelatinous epicutis with the hyphae interwoven, slightly gelatinized and 3.8–7.5 μm wide; at times debris abundant on the pileal cuticle; hypoderm indistinct; stipe cuticle an undifferentiated epicutis of repent hyphae; caulocystidia absent; lactifers rare in the pileal trama, scattered in the stipe trama; pigmentation vacuolar; clamp connections abundant on the hyphae of the pileal cuticle and at the base of the basidia.

Macrochemical reactions: Guaiac, guaiacol, pyrogallol, and alpha-naphthol positive on the pileal flesh just above the lamellae, lamellar

surface, and the pileal and stipe surfaces, negative elsewhere; selenium dioxide, sulfovanillin, KOH, and sulphuric acid questionable; aniline, phenol-aniline, thallium oxide, and PDAB negative.

Habitat and Distribution: Scattered to gregarious and at times solitary in humus of dense mixed woods, coniferous woods and mixed conifer-redwood forests; collected beneath mountain hemlock, western red cedar, Douglas fir, and at times near redwood; Washington and California.

Type: Solitary in needle humus of coniferous woods, near western red cedar, Sulphur Creek campground, Mt. Baker National Forest, Snohomish Co., Washington; 17 Oct 1966; *Largent 1849* (HSC).

Material Studied: CALIFORNIA. Del Norte Co.: *L4029, 4030, 4031, 4032, 4033, 4034, 5224.* Humboldt Co.: *Thiers 14565.* Marin Co.: *Madden 847; Thiers 18140; L810, 812.* Mendocino Co.: *Thiers 14642, 18402, 21325; L791, 5434.* San Mateo Co.: *Thiers 8687, 12188, 12203, 18333; L807.* Santa Cruz Co.: *Thiers 13537.* Sonoma Co.: *L4215.* WASHINGTON. Jefferson Co.: *L3150.* Kittitas Co.: *L1319.* Pierce Co.: *L1358.* Snohomish Co.: *L1296, 1849, 3232.*

Entoloma madidum is easily recognized by its tricholomatoid habit, viscid to lubricous pileal surface, blue to bluish grey pileus and stipe apex, eventual yellowish tinged stipe base, white lamellae when young, and mealy odor. With the exception of the forms with a consistent white stipe base, my specimens seem to agree with Hesler's concept (1967, p. 112) of this species.

Entoloma bloxamii (Berk. & Br.) Sacc. is similar to *Entoloma madidum* because of its blackish blue pileus, yellowish white stipe base, and slightly mealy odor but differs by having spores 8–10 μm long. *Entoloma bloxamii* has been considered a form of *Rhodophyllus madidus* (Fr.) Quél. (=*Entoloma madidum*) by Kühner and Romagnesi (1953). In addition, Kühner and Romagnesi comment on collecting specimens with smaller spores and a mealy odor (no mention of stipe base color is made) intermediate between *Entoloma bloxamii* and *Rhodophyllus madidus*. In their description of *R. madidus* (p. 197) no mention is made of a viscid or lubricous pileus, nor of a yellowish stipe base although they do state the stipe base is definitely not greyish blue or slate violet.

The color of the stipe base in my specimens is variable, at first white and becoming yellowish with age and/or handling; therefore, this feature is considered taxonomically insignificant. However, no variation was noted in spore size or in odor; consequently these features appear stable and should receive some emphasis in the taxonomy of *Entoloma madidum*. I agree with Kühner and Romagnesi that *E. bloxamii* is a form of *E. madidum*, but I feel the two taxa should be separated on the basis of spore size. Thus, two varieties of *E. madidum* are proposed: 1) variety *bloxamii* for those specimens with large spores (8–10 μm) based upon *Agaricus bloxamii* Berk. & Br., and 2) variety *madidum* for those specimens with smaller spores (6–8 μm) based upon *Agaricus madidus* Fr.

Two new forms are proposed for this latter variety: 1) *E. madidum* var. *madidum* forma *madidum* for those specimens with a foetid odor, like *Russula foetens,* based on Fries' original concept of *Agaricus madidus,* and 2) *E. madidum* var. *madidum* forma *farinosum* for specimens with a mealy odor. My specimens, Hesler's specimens, and at least the intermediate forms of Kühner and Romagnesi belong to the latter form.

Entoloma nitidum sensu Kühner & Romagnesi is similar to *E. madidum* var. *madidum* forma *farinosum* because of its bluish color but differs by having a more slender stipe, a raphanoid-herbaceous taste and larger spores.

Entoloma madidum was reported previously from the West Coast only from San Rafael, California (Harkness and Moore, 1880).

4. **Entoloma madidum** (Fr.) Gill. var. **bloxamii** (Berk. & Br.) Largent, comb. et stat. nov.

Basionym: *Agaricus bloxamii* Berk. & Br. Outlines, p. 143. 1860. For a discussion of similar species, see entry No. 3.

5. **Entoloma** (Fr.) Kummer emend. Largent & Benedict sect. **Turfosi** (Kühner & Romagnesi) Largent, comb. et stat. nov.

Basionym: *Rhodophyllus* Quél. subg. *Entoloma* Fr. sect. *Nolanidei* Fr. group *Turfosi* Kühner & Romagnesi, Flore Anal. des Champ. Supérieurs, p. 196. 1953.

6. **Entoloma** (Fr.) Kummer emend. Largent & Benedict sect. **Turfosi** (Kühner & Romagnesi) Largent subsect. **Trachyosporum** Largent, subsect. nov.

Pileus et stipes lubrici; sporae 6.0–8.5(–9.0) × 5.5–7.0(–8.0) μm, ovato-angulatae et obscurae angulatae. Typus: *Entoloma trachyosporum* Largent.

Because of the small spores with inconspicuous angles, pilei not exceeding 6 cm in diameter, their mild to raphanoid odor, vacuolar pigmentation and abundant clamp connections, species of this subsection appear to belong to group *Turfosi,* section *Nolanidei,* subgenus *Entoloma* sensu Kühner & Romagnesi. In my opinion, this set of features, particularly the spores and the small pileal size, is sufficiently significant to raise this group to sectional rank.

The subsection *Trachyosporum* is monotypic. *Entoloma trachyosporum* has three color variants, differing from one another by the amount of violaceous to purplish pigment present in the carpophore. Correlated with these pigment differences is a distinct gradation in macrochemical reactions. Variety *trachyosporum* has no violaceous or purplish color and does not react macroscopically with any reagents; var. *griseoviolaceum* has a violaceous stipe and the pileal flesh reacts with alpha-naphthol; and var. *purpureoviolaceum* has a violaceous stipe, a brown pileus with a

reddish to purplish tinge, and reacts positively with pyrogallol and selenium dioxide but not with any other reagents.

KEY TO VARIETIES OF *E. trachyosporum*

Stipe white to pallid, often darkening with age; pileus at first greyish brown, becoming paler with age . . . . . var. *trachyosporum.*

Stipe and pileus not as above

Pileus purplish brown to reddish brown at first; lamellae bluish grey when young; pileal flesh purpliseh blue to violaceous grey . . . . . var. *purpureoviolaceum.*

Pileus grey brown, at least on the disc; lamellae pallid to greyish brown when young; pileal flesh buff . . var. *griseoviolaceum.*

7. **Entoloma trachyosporum** Largent, sp. nov.

Pileus 13–40 mm latus, convexus, glaber lubricus et plus minusve subvisidus, hygrophanus, griseolo-brunneus vel vulvus fuscus; contextus pilei aurantio-albus; lamellae adnexae vel sinuatae, pallidae vel subalbae primo; stipes 2–7 mm crassus, 30–90 mm longus, lubricus, appressofibrillosus vel glaber, subalbus demum aurantio-griseus vel brunneoloaurantius; sporae 6.0–8.0 × 5.5–7.0 μm, verrucoso, angulatae; cystidia nulla; hyphae cutis filamentosae, repentes.

Pileus 13–40 mm broad, 4–12 mm high, convex, at times almost parabolic becoming broadly convex to plane with age, often acutely to broadly umbonate; surface glabrous, lubricous and more or less subviscid, hygrophanous; at first greyish brown or dark yellowish brown to dark brown (5–6, E–F, 3–5), remaining so on the disc but elsewhere becoming brownish orange to light greyish brown or greyish orange (5–6, B–D, 3–5), at times even as light as orange-grey (5, B, 2); margin decurved and entire, with age becoming plane, and at times eroded, translucent-striate when moist, becoming nontranslucent with age; trama orangish white (6, A, 2), 2–4 mm wide on the disc, taste and odor mostly indistinct, at times faintly raphanoid. Lamellae finely adnexed with a decurrent tooth to sinuate, subdistant, narrow to moderately broad, at times almost broad, 2–7 mm wide, 5–15 mm long, pallid to an off-white at first; margin smooth becoming eroded, concolorous with surface. Stipe 2–7 mm wide at the apex, 4–10 mm wide at the base 30–90 mm long, equal to more or less clavate, lubricous, silky appressed fibrillose to glabrous, longitudinally striate, the surface hyphae agglutinated with age making the surface irregular rimulose, at first an off-white (6, A–B, 1) becoming orange-grey to brownish orange (5–6, A–D, 2–5) and rarely dark yellowish brown (5, E–F, 5) with age and on handling; trama concolorous with the pileus, fleshy-fibrous, basal tomentum scant to absent.

Spores 6.0–8.0 × 5.5–7 μm, average length 7.1 μm, average width 6.2 μm, L–D 0.0–1 (–2.0) μm (average 0.9 μm), 6–8 angled, ovate and warty angular, almost *Rhodocybe*-like but definitely angular in end

view; basidia 30–39 × 7.5–9.0 μm, average length 34.6 μm, average width 8.3 μm, 4-spored, clavate; cheilocystidia and pleurocystidia absent; pileal cuticle a repent layer of filamentous hyphae with terminal cells cylindro-clavate, 30–67.5 × 4.0–7.0 μm, average length 50.0 μm, average width 5.5 μm, L/D 5.7–13.9, average 9.9; hypoderm of elliptical to ovate cells; tramal hyphae interwoven; oleiferous hyphae abundant in pileal and stipe trama; pigmentation vacuolar; clamp connections present on hyphae of the pileal and stipe cuticle, at the base of the basidia, and questionable at the base of the stipe.

Macrochemical Reactions: Guaiac, guaiacol, alpha-naphthaol, pyrogallol, PDAB, selenium dioxide, and Melzer's negative.

Habitat and Distribution: Scattered to gregarious in humus of coniferous woods, beneath Douglas fir; Washington.

Type: Scattered to gregarious in mossy humus of a coniferous forest, beneath Douglas fir; southeast of Tenino mounds, Thurston County, Washington; 4 Nov 1966; *Largent 2169* (HSC).

Material Studied: WASHINGTON. Gray's Harbor Co.: *L1961;* King Co.: *L1719, 1865;* Mason Co.: *L2027;* Pierce Co.: *L1187, 1657, 3152;* Snoqualmie Co.: *L2799, 3236;* Thurston Co.: *L2196.*

The greyish brown color of the pileus that becomes yellowish brown on fading, pallid lamellae, whitish stipe at first that darkens with age, and buff color of the pileal flesh are features that characterize *E. trachyosporum.*

8. **Entoloma trachyosporum** Largent var. **griseoviolaceum** Largent, var. nov.

Ut in typo sed pileus griseo-brunneus disco; lamellae pallidae vel griseobrunneae primo; contextus pilei bubalinus; stipes violaceus.

Pileus 13–60 mm broad, 7–15 mm high, convex to broadly convex at first becoming broadly convex to plane, at times broadly umbonate, glabrous and definitely lubricous, slippery to the touch, hygrophanous, at first dark greyish brown (6, F, 2–3), remaining so on the disc, becoming orange-white to pale orange (light brownish) (6, A–C, 2–3(–4)) on the margin; margin decurved becoming plane with age, even, smooth, translucent-striate; trama (2–)3–4 mm thick, pale light brown (6, A–B, 2) at times; odor and taste indistinct. Lamellae uncinate to adnexed, subdistant, narrow to moderately broad, 3–9 mm wide, 8.5–22.0 mm long, grey at first becoming brownish with a pinkish tinge with age. Stipe (3–)4–7 mm wide at the apex, (4–)7-8 mm wide at the base, 35–90 (–100) mm long, equal to more or less clavate, glabrous but with the surface fibrils agglutinated and then the surface interwoven rimulose, hygrophanous, medium greyish violet to dark bluish grey (17–21, D–F, 2–4), fading to silvery violaceous white to pale bluish grey (19–21, A–C, 2–4), basal tomentum area whitish becoming very pale yellowish brown on bruising (5–6, A, 2–3); trama pale violaceous white, fleshy-fibrous, hollow with age.

Spores 6.5–8.0(–10) × 5.5–7.0(–8.0) μm, average length 7.0 μm, average width 6.5 μm, L–D 0.0–1.5 μm (average 0.5 μm), ovate and warty angular, distinctly angular in end view; basidia 26–32 ×8.5–10.0 μm, average length 29.6 μm, average width 9.6 μm, 4-spored, clavate; cheilocystidia and pleurocystidia absent; pileal cuticle a loosely interwoven to repent layer of filamentous hyphae the terminal cells of which are cylindro-clavate and measure 47.5–87.5 × 5.0–6.5 μm, average length 69.4 μm, average width 5.6 μm L/D 9.5–17.5 (average 12.3), at times more or less subviscid; hypoderm tightly interwoven; trama homogeneous; cuticle at the stipe apex an undifferentiated epicutis of repent hyphae; caulocystidia absent. Oleiferous hyphae absent; pigmentation vacuolar; clamp connections abundant, present on the hyphae of the pileal cuticle, on the hyphae of the basal tomentum and at the base of the basidia.

Macrochemical Reactions: Alpha-naphthol positive; pyrogallol and selenium dioxide questionable; guaiac, guaiacol, PDAB, and sulfovanillin negative.

Habitat and Distribution: Scattered to gregarious in needle or mossy humus in coniferous forests, collected beneath deer fern, *Trillium* sp., Douglas fir, western red cedar, and hemlock; late September to early November, Washington.

Type: Scattered to gregarious in mossy humus beneath hemlock, Ipsut Lake trail, Mt. Rainier National Park, Clallam Co., Washington, 25 Sept 1966; *Largent 1659* (HSC).

Material Studied: WASHINGTON. Clallam Co.: *L1659;* Pierce Co.: *L1354, 1843;* Snohomish Co.: *L1714, 1867.*

9. **Entoloma trachyosporum** Largent var. **purpureoviolaceum** Largent, var. nov.

Ut in type sed pileus purpureiobrunneus vel rufibrunneus primo; lamellae caesiae primo; contextus pilei purpureus vel violaceo-griseus; stipes violaceus.

Pileus 13–60 mm broad, 5–18 mm high, convex to parabolic or broadly convex at first becoming broadly convex to plane, at times uplifted, obscurely to broadly umbonate; glabrous, at times more or less minutely velvety on the disc, lubricous and slippery to the touch., more or less subviscid due to apparent gelatinized superficial hyphae, hygrophanous in radial streaks, dark brownish grey with reddish to purplish tinges (9–11, E–F, 2–3) to reddish grey (12, E–F, 2–3) to purplish grey (13–14, E–F, 2–3) becoming on fading brownish grey (6–8, F, 2–3) on the disc and orange-grey to greyish orange (6, B, 2–3) or light reddish grey to greyish red (7, B, 2–3) or light brownish grey to brownish orange (6–7, C, 2–3) on the margin; margin decurved, entire to eroded, smooth and undulate, translucent-striate at first; trama 2–5 mm thick, at first pallid buff (7, C, 3) becoming on exposure to air greyish blue to bluish grey to dark blue (20, D–E, 3–4); taste and odor indistinct, at

times more or less fragrant and pleasant. Lamellae finely adnexed with a decurrent tooth, mostly subdistant to distant but at times crowded to close, moderately broad to broad (2–8 mm wide, 8–15 mm long), grey to bluish grey at first becoming brownish pink with spore maturity; margin smooth and concolorous with the face. Stipe 2.5–5.0 mm wide at the apex, 3.5–8.0 mm wide at the base, 10–90(–120) mm long, equal to more or less clavate; surface more or less gelatinized, longitudinally striate, lubricous to more or less subviscid, surface hyphae often agglutinated and therefore the surface becoming interwoven rimulose, hygrophanous and rippled, at first dark bluish grey (19–23, D–F, 2–3 (–4)), fading from the base upward to a violaceous or bluish white (19–23, A, 2) to a light bluish grey (19–23, B, 2–3) or a greyish violet (19, B, 3); trama fleshy becoming hollow, greyish-violet (18–19, D–F, 3–4); basal tomentum copious, whitish becoming buff tinged (5–6, A, 2) with age.

Spores 5.5–8.0 × 5.5–7.0 μm, average length 7.0 μm, average width 6.5 μm, L–D 0.0–1.5 μm (average 0.5 μm), ovate to warty angular; basidia 28–35 × 7.0–10.0 μm, average length 32.0 μm, average width 8.6 μm, 4-spored, clavate; cheilocystidia and pleurocystidia absent; pileal cuticle a loosely interwoven layer of more or less gelatinized filamentous hyphae, terminal cells cylindro-clavate, 30–67.5 × 4.0–10.0 μm, average length 47.5 μm, average width 7.3 μm, L/D 5.0–9.2 (average 6.4), overlaying a distinct hypodermal area of clavate to ovoid hyphae; trama interwoven; cuticle at the stipe apex an undifferentiated epicutis of repent hyphae. Lactifers abundant in the pileal and stipe tramas; clamp connections abundant on the hyphae of the pileal cuticle and at the base of the basidia, scattered on the hyphae of the stipe cuticle and basal tomentum; pigmentation vacuolar.

Macrochemical Reactions: Pyrogallol and selenium dioxide positive; alphanaphthol, guaiac, guaiacol, sulfovanillin, and Melzer's negative.

Habitat and Distribution: Scattered to gregarious in needle or mossy humus of coniferous forests, early September to late November; Washington.

Type: Scattered in mossy humus of coniferous forests, collected beneath western red cedar; two miles southwest of Troublesome campground, Snoqualmie National Forest, Snohomish Co., Washington; 5 Nov 1966, *Largent 2197* (HSC).

Material Studied: WASHINGTON. Gray's Harbor Co.: *L1960;* King Co.: *L1302, 2028;* Kitsap Co.: *L2259;* Mason Co.: *L2092, 2145;* Pierce Co.: *L1675, 3151;* Snohomish Co.: *L1695, 2197, 2806, 3230.*

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EUPHORBIA (SUBG. AGALOMA) HENRICKSONII, NEW SPECIES FROM THE CHIHUAHUAN DESERT

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The extensive and increasingly accessible arid areas of north-central Mexico have yielded a number of interesting new taxa in our explorations designed to supply the materials for a *Chihuahuan Desert Flora*. The handsome species described here is strikingly distinct from any heretofore described. I am happy to associate with it the name of Dr. James S. Henrickson, California State University–Los Angeles, an able and extraordinarily enthusiastic worker who, with considerable personal sacrifice, has mounted a strenuous collecting campaign and is collaborating in the production of the manual flora.